

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

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PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing (day/month/year) 15-10-2004	
Applicant's or agent's file reference 21015346	FOR FURTHER ACTION See paragraph 2 below
International application No. PCT/SE 2004/001178	International filing date (day/month/year) 09.08.2004
Priority date (day/month/year) 07.08.2003	
International Patent Classification (IPC) or both national classification and IPC H01Q 11/10, H01Q 21/30, H01Q 19/10	
Applicant Kildal Antenna Consulting AB et al	

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.
For further opinions, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

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Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	<u>6, 10, 12, 14-15, 17-22, 28-32</u>	YES
	Claims	<u>1-5, 7-9, 11, 13, 16, 23-27</u>	NO
Inventive step (IS)	Claims	<u>30</u>	YES
	Claims	<u>1-29, 31-32</u>	NO
Industrial applicability (IA)	Claims	<u>1-32</u>	YES
	Claims	<u></u>	NO

2. Citations and explanations:

Reference is made to the following documents:

D1: US 3696437 A
D2: US 6362796 B1
D3: US 5093670 A
D4: US 3079602 A
D5: GB 983447 A
D6: US 5274390 A
D7: US 3543277 A
D8: EXCELL P.S. et al: "Log-periodic antenna for pulsed radiation", ELECTRONICS LETTERS 15th October 1998 Vol. 34 No. 21

Motivation

The claimed invention relates to an antenna comprising several electric dipoles, with different properties, arranged in pairs so their geometrical centres at least approximately coincide. The object of the invention is to achieve a simple broadband antenna that can be used to feed reflectors in an efficient way.

Each of D1 (column 1 lines 5-9, column 2 lines 21-26, column 4 lines 1-2), D2 (column 2 lines 18-22, lines 52-67, column 3 lines 16-39) D3 (abstract, fig. 4) and D6 (column 2 lines 28-45, column 6 lines 17-20) reveals antennas in accordance with claim 1.

Further, the subject matter of claims 2, 7 and 16 is known

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of: BOX V

from D1, while the subject matter of claims 3-5 and 8-9 is known from D2. The subject matter of claims 11, 13 and 23-27 is known from D3. Therefore, the antenna stated in claims 1-5, 7-9, 11, 13, 16 and 23-27 lacks novelty.

D4 shows a logarithmically periodic antenna with the radiators forming serpentine-shaped lines (figs. 3-4), while D5 shows such an antenna with dipole arms formed by two opposing serpentine-shaped lines (cf. figures 1 and 4). It is considered obvious to a person skilled in the art to modify the dipole design in D2 in accordance with the design known from D3 and D4 per se, especially with knowledge of the solutions shown in figures 1 and 4 in D5. Therefore, the subject matter of claims 10 and 14 is considered to lack inventive step.

D7 discloses a reduced size broadband log periodic antenna (abstract of the disclosure). The revealed antenna comprises dipole arms in accordance with the dipole arms that are stated in the characterising part of claim 12. D8 reveals a log periodic antenna with dipole pairs connected to "separate feed lines", per se (fig. 3). It is considered obvious to a skilled person to modify, for example, the dipole elements revealed in D3 in accordance with the design of the dipole elements shown in D7, in order to reduce the size of the antenna device. Further, with knowledge of the feeding using "separate feed lines", known per se from D8, it is considered obvious to a person skilled in the art to use such feeding, for example, in connection with such a log periodic antenna as is known from D1. Therefore, the subject matter of claims 12 and 31-32 is considered to lack inventive step.

Dependent claims 6, 15, 17-22 and 28-29 only appear to disclose such features that are common knowledge and obvious to a person skilled in the art and with knowledge of the cited documents. Therefore, the subject matter of claims 6, 15, 17-22 and 28-29 also lacks inventive step.

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawing or on the question whether the claim are fully supported by the description, are made:

Claim 17 does not meet the requirements of Article 6 PCT in that the matter for which protection is sought is not clearly defined. The claim attempts to define the subject-matter in terms of the result to be achieved, which merely amounts to a statement of the underlying problem. Thus, the claim lacks the technical features necessary for achieving this result.

Claim 28 is unclear. Thus, it is not clearly defined how the second conductor is designed in order to achieve the electromagnetic coupling.

It is also questioned if the subject matter of claims 31 and 32 is fully supported by the description.

It is noted that the claims do not mention that the feed points of the dipole chains are in the centre, at the smallest dipoles. The description indicates that this is an important feature.

Finally, the description (and the claims) includes many alternatives related to the design of the antenna. It is not clearly defined what the common concept of the invention is. Not all of the alternative constructions seem to have all of the advantages mentioned in the description. Also, the prior art documents seem to mostly reveal what is mentioned in the description. A completely new set of claims, including an independent claim disclosing all of the necessary technical features, has to be defined if a positive opinion is to be possible. Such an independent claim has to fulfil the requirement of novelty and inventive step. The description indicates that the described different feeding systems are not the "common concept" of the invention.